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A MAGAZINE FOR TEACHERS

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THE JOURNAL OF GEOGRAPHY

A MAGAZINE FOR TEACHERS

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The JOURNAL of GEOGRAPHY

VOLUME XXII JANUARY, 1923 NUMBER 1

GEOGRAPHIC REGIONS OF THE FISHERIES IN ASIATIC RUSSIA

STANISLAUS NOVAKOVSKY
Clark University

The Slavonic tribes dwelling in Russian territory were noted of old for their passion for fishing. This industry played a very important part in the economic life of Russia from the earliest days, as fish has always been the most important article of food. On the eve of the world's war the fishing industry in Russia was of great importance economically, because it not only provided means of livelihood to half a million fishermen and several million peasants, but at the same time furnished the Russian people with cheap and wholesome food.

If we take into consideration the amount of fish caught in the year 1911 and its value as given in the data of the Central Russian Bureau of Statistics we shall see that the total output in European Russia was about 700,000 tons, valued at $48,500,000. At the same time, in Asiatic Russia the output was above 133,000 tons valued at $5,961,500. It should be mentioned here that these figures include fish caught for commercial purposes only. Fish caught by the population for their own consumption is not included. The total yearly catch of fish in European Russia in rivers, lakes and seas averages about 1,000,000 tons and amounts to $75,000,000 or $80,000,000. At the same time it may be well supposed that the yearly catch in entire Asiatic Russia amounted in 1913 to approximately $13,000,000 or $14,000,000—a very small amount in comparison with the tremendous fishing resources of this land of the future. This data is not exaggerated, but on the contrary is figured on a basis below the actual catch, for statistics of the fishing industry at that time were in a primitive stage.

In spite of the fact that fish does not constitute the only source of natural riches, the fishing industry is one of the most important occupations in the every day life of the population of Asiatic Russia. Tens of thousands of inhabitants of Siberia, as well as those of other regions of Asiatic Russia, are fed thru the fishing industry, and in some parts of Siberia, fishing is the sole occupation of the inhabitants. Commer-

cial fishing, however, exists only in some regions. The rivers, lakes and seas in Asiatic Russia contain innumerable fishing resources. Due to the sparse population and the lack of convenient transportation, these resources are as yet untouched. Commercial fishing altho in existence but a few decades made a tremendous progress during the last few years. At present Siberia's output is five or six times less than that of European Russia, but its future is more promising. While the resources of European Russia are greatly exhausted and continue to diminish rapidly, those of Siberia are practically untouched.

The fishing regions of Asiatic Russia are closely related to the geographic conditions of the country. The largest fishing centers are found where conditions of climate and soil are not favorable for farming and cattle-breeding. In the localities where the climate is entirely favorable for the development of agriculture, the fishing industry either disappears entirely or becomes a secondary occupation.

GEOGRAPHIC REGIONS

In pointing out the geographic distribution of the fishing industry in Asiatic Russia, one must first of all note five principal very large regions:

1. Northern Region. This region embraces the river system of Obi, Yenisei, Lena, Kolyma and other river systems of the Arctic Ocean. Fish and mammalia are especially plentiful here.

2. Southern Region. This region includes the Aral Sea with the rivers Syr-Darya and Amur-Darya and the system of Lake Balkash. In the future with the development of improvements of the fishing industry here, the fish of this region will present a wonderful product for export into adjoining provinces.

3. Central Region. This region covers the Lake Baikal system. Its fishing resources are very rich. This region has but a local value by offering cheap food to the inhabitants of Irkutsk and other settlements along the shore of Lake Baikal.

4. Northeastern Region. This region includes the Seas of Bering, Kamchatka and Okhotsk, with their rivers. The fish kingdom of this region is unusually rich in number, quality and species and makes it almost the richest place on the globe. This region, therefore, from a commercial point of view is of great importance for Russia as well as for other countries of the world and offers a wide field for investment for America.

5. Southeastern Region. This region embraces the Sea of Japan and the lower part of the Amur river system. It is no less rich in sea

products than the Northeastern Region which it resembles in a good many ways. The climatic conditions of the Southeastern Region, however, are milder and more favorable for fishing; it also adjoins well populated provinces, hence the fishing industry of this region will develop more rapidly than that of the former one. It is very important to notice that these two adjoining regions will be in the near future the field of great competition and struggle between Russia and Japan.

THE NORTHERN REGION

These five principal regions can in turn be further subdivided. The Northern Region which comprises the coast lines of all Siberia along the Arctic Ocean, can be divided into three sub-regions: (a) The Obi, (b) The Yenisei and (c) The Lena-Kolyma.

The Obi sub-region comprises the basin of the Obi River. The fishing industry here is greatly hampered by the unfavorable conditions of climate which limits the fishing season to three months. This, together with very poor lines of communication, acts as a great draw-back to the development of the Obi fisheries. This region abounds in fresh water fish (such as perch, pike, crucian carp, cabo and others) and also in sea fish which go up the rivers to spawn (such as sturgeon, herring, different kinds of gwiniad, muksun—Coregonus Muksun—and others). The most important marketable fish is the muksun. In the basins of the Obi, according to the classification of N. A. Varpakhovsky, a well known ichthyologist, there are over forty different species of fish. The fishing season of this region may be divided into three parts. The spring season when the fish ascend the river to spawn (this is considered the best period); the fall season when the surviving fish follow the current and return to the sea; and the third or winter season. In some localities during this season the odor of fish becomes offsensive, rendering the fish unsuitable for food. During this season, in the middle and lower parts of the Obi, the fish regularly suffocate for lack of oxygen caused by the solid ice. Thus the river becomes devoid of all life until late in the spring. The total annual catch from the Obi and its tributaries reaches approximately $1,000,000 in value.

The Yenisei sub-region covers the system of the Yenisei River. Altho the fishing industry was in existence in the lower course of the Yenisei from times immemorial, it has begun only quite recently to assume more important proportions. The fisheries are mostly centered in the lowest part of the Yenisei. The fishing industry here engages both the natives and the settlers. The fish is shipped south and

owing to its low grade is not in demand beyond the boundary of the Yenisei province. The principal species caught in this region are sturgeon, herring, gwiniad, nelma (Siberian Salmon), muksun and others. The total catch reached eleven and a half million pounds.

The Lena-Kolyma sub-region comprises the basins of the rivers of those names, and almost coincides with the borders of Yakutsk province which is rich in rivers and lakes. From olden times fishing has been the chief occupation of the population, altho it is not equally developed in all parts. In the southern part of this province, where farming and cattle breeding are popular, fishing is not the chief occupation. Here the natives and Russian settlers prefer to do farming and cattle-breeding and fishing is a secondary occupation. On the other hand in the northern part, where there is no agriculture or cattle-breeding, fishing is the predominant occupation of the inhabitants. Fish constitutes the principal food not only of the entire population, but of team-dogs as well. In spite of the fact that nature endowed this region so liberally with fish, fishing is conducted very amateurly and carelessly, so that the yearly catch is seldom sufficient to provide the needs of the people with fish for the eight months of winter. One of the most significant obstacles in the way of making the fishing industry a success on the Kolyma is the inclement climate—the river being ice-bound more than 265 days in the year. In spite of this, there were 11,000,000 pounds of fish caught in the whole Kolyma river system in 1908. This figure is an excellent proof of the piscatory riches of the country. The catch consists of gwiniad, herring, sturgeon, muksun and others. In addition, the shores of the ocean offer a field for hunting seal. The preserving of fish in this locality is most primitive, the people being unable even to salt their fish properly.

THE SOUTHERN REGION

The Southern Region covers so vast a territory that it will be more convenient to distinguish here three separate sub-regions, namely: (a) The basin of Aral Sea, (b) The basin of Lake Balkash, (c) The lakes of Baraba steppe.

The Aral sub-region includes besides the Aral Sea proper, the rivers Syr-Darya and Amur-Darya (which empty into it), Lake Issik-Kul and other lakes located within the system of these rivers. The opening of the fishing industry in this sub-region dates only from recent times, namely, about 1875. As the climate of this region proved very favorable for the fishing industry, it soon attained a flourishing condition. The construction of a railway uniting Tashkent the chief city of Turke-

stan, with Russia proper, had a greatly stimulating effect upon the development of the Aral Sea fisheries, as an easy way for exporting the goods was thus created. The chief catch is sturgeon, barbel, cheat-fish, bream, carp and many others. The most valuable catch constitutes sturgeon, altho during the last years it has diminished greatly. Of great commercial value is carp (Cyprinus Carpiol), millions of pounds of which are being caught thruout the sea and especially in the rivers Syr-Darya and Amur-Darya. Of the plentifulness of carp one can judge by the experience of a certain native of Ural who in 1906 caught 40,000 pieces of carp in one take. The fishing industry of this region presents a picture of total neglect and depredation of the natural resources. As a result of this, the catch of some species of fish is beginning to decrease considerably. The fish caught in this region has found access to many markets of Asiatic and European Russia. The value of fish caught in 1909 in this region was placed at more than two million dollars.

The Lake Balkash sub-region comprises a few lakes scattered over the Southern part of the Semipalatinsk Province. The center of fishing in this region is Lake Zaisan and the river Irtish; of secondary importance are lakes Markakul, Balkash and others. In the waters of this sub-region, fish of the carp family are predominant. Fishing in this region is done in a wasteful way.

The Baraba sub-region covers a row of large lakes in the northern part of the Baraba steppe and consists chiefly of nearby lakes, covering an area of about 810,000 acres. The marketable fish of this sub-region includes perch, pike, crucian-carp, gremille and others. The annual gross receipts of fisheries of this region are upwards of $500,000.

The Central Region

The Central or the Lake Baikal Region embraces Lake Baikal (which covers in itself an area of more than 13,000 sq. miles), as well as the lower parts of the rivers emptying into it and many nearby lakes. Among the thirty or more kinds of fish which are found in the lake, the most important are omul (corregonus migratorius), gwiniad (corregonus baicalensis), char (thymallus arcticus baicalensis), sturgeon, pike, perch, roach, crucian-carp, ell-pout, umber. The most important among these is omul, which is caught all the year round. There is also a very interesting specimen of fish found only in Lake Baikal. It is the so-called dragonet-golomianka (Comephorus baicalensis). This fish inhabits the deepest waters of the lake (over 2,000 feet) that is, under a high pressure of water. In addition to the numer-

ous species of fish, the waters of Baikal are also plentifully supplied with sponges and seals. Of the richness of this region one can judge by the fact that five to eight million pieces of omul and several million pounds of miscellaneous fish are being caught here yearly.

Northeastern and Southeastern Regions

There are eleven fishing regions that could be established in the Russian Far East, including the waters of the Northeastern and Southeastern regions. They are (1) Amur, (2) Interior-Ussuri, (3) Southeastern, (4) Nikolaevsk, (5) Sakhalin, (6) Okhotsk, (7) Western Kamchatka, (8) Eastern Kamchatka, (9) Anadyr, (10) Chukhotsk, (11) Commodore.

Amur Region. The Amur region embraces the entire course of the Amur and the mouths of its tributaries from the point where the Shilka and Argun join, to the mouth of the Sungari; in other words, this region corresponds practically to the Province of Amur. The fisheries of this region can be placed under three categories; the capitalistic fisheries, small fisheries owned by peasants and aborigines and fishing for self consumption. The first category is little developed, being carried on chiefly along the lower currents, but in this region the two latter categories prevail. The Amur presents enormous resources and a variety of species. According to the investigation of Professor L. S. Berg, of Petrograd University, the fauna of the Amur contains seventy-two species of fish, while in the basin of the Volga there are only fifty-five species, in the Danube fifty and in the Obi forty-five. Of greatest industrial importance are the keta (salmon), sturgeon and humpback salmon. Most of the Keta are caught in the fall when the fish begins to move from the sea thru the Nikolaevsk estuary up along the Amur, and enters the tributaries. The other species of fish caught, are principally mukson (Coregonus), char, gang-fish, silurus, eel-pout, pike, carp, crucian-carp, bream, roach, bull-head, sea-horse, etc.

Interior-Ussuri Region. This region is situated in the valleys of the Ussuri and Sungari Rivers, and in the basin of Lake Khanka and other water systems situated in this locality. In the rivers of this region aside from the usual fish, a splendid catch in the fall is the Keta, which penetrates to the very sources of the smallest rivers in this section. In Lake Khanka can be found many valuable species of fish, the conditions there being very favorable for fishing. The interior fishing particularly in Lake Khanka, would have remarkable results if the lack of good roads did not hinder this industry. In this region they catch principally the keta (salmon), sturgeon, silurus,

pike, carp, bream, perch, roach, crucian carp, char, bull-head, gang-fish, etc. The fishing industry of this region for 1913, not counting the fish consumed by the populace for its own needs was valued at about $93,786.

The Southeastern Region. This region embraces a very extensive stretch along the coast of the Maritime Province, extending from the borders of Korea to the Amur estuary. The principal catch here is herring, also humpback-salmon and keta. There are also numerous other species such as dorse, smelts, mackerel, flounders, crabs, shrimps, sea-cole and trepang (Holuthuria atra), the latter are exported in dried form exclusively to Chinese markets, where they are considered very delicious and therefore yield a good profit. Along the shores of Russia from St. Olga Bay south to the Tiumen-Ula River, many thousands of small boats are engaged yearly fishing for this trepang. Crabs are caught also in great quantities in the same region. Sometimes crabs weighing from ten to twenty pounds are obtained. Oysters of very good quality can be found in the Bay de Castries. Besides fishing, part of the population here is engaged in catching sea-weed, the yearly catch of which is over 3,000,000 pounds. At the present time only a few species of fish are being utilized in this region, while these waters contain a plentiful supply of such valuable kinds of fish as cod, herring, dorse, flounders, etc. Russian tradesmen also ignore such resources as seal, dolphin, sea-weed, etc.

The following figures for 1910 serve as a good example of the extent of productivity of this region where the number in pieces of three principal species of fish was as follows: herring, 36,000,000; keta, 75,800; humpback, 429,200.

Nikolaevsk Region. This region comprises the lower current of the Amur, the Amur estuary, and the nearby shores of the Okhotsk Sea. It is the most active of all the industrial fishing regions of the Far East, and is the cradle of the Russian fishing industry in the waters of that territory. The first Russian settlers who came there about sixty years ago followed the example of the aborigines and began fishing. For a long time this was done exclusively to satisfy their own needs and to sell small quantities in the neighboring localities. At that time there was a tremendous amount of fish in this region, but the lack of transportation facilities prevented the fish from being marketed in Siberia and European Russia. This condition prevailed for many years. Finally, in the early nineties of the last century, the Japanese began to appear there because the desirable species of salmon were being exterminated along the shores of their

native country. Thus the Nikolaevsk Region gained what it needed badly, namely, a good market. Russia did not know how to take advantage of this situation and to keep the Japanese in the position of buyers, but instead agreed to let them participate in the fishing. Because of this short sightedness on the part of Russia, the foreign fish industry flourished in Russian waters and yet brought nothing to the mother country, but the two and one-half cent tax per pud (thirty-six pounds), because the fish were caught by the Japanese and exported to the Japanese markets. Later a Russian market was also created to meet the demand of the greatly increased number of Russian soldiers in the Far East. From that time on the Nikolaevsk Region began to develop rapidly, and in recent years the export of different kinds of fish products to European Russia and Europe in general, has increased considerably. In conformance with the treaty of 1907, fishing is limited exclusively to Russians in that part of the region which lies along the Amur, beyond Nikolaevsk. Near the estuary itself, the Japanese are permitted to cure the purchased fish, not being allowed, however, to do the fishing themselves. On the shores of the sea they have equal fishing rights with the Russians. Since 1907 the Nikolaevsk Region has developed rapidly, acquiring more modern methods of fishing and thus increasing the quantity of fish caught and the amount exported to European markets. Approximately seventy per cent of the fish caught in the Nikolaevsk Region was exported to Japan.

Aside from the fact that such a large percentage of the catch went to the Japanese markets, the fish lots were for the most part in the hands of the Japanese fishermen. At the fishing convention in 1907 Japan received the privilege of long term leases of fishing lots belonging to the government, but the Japanese employ Russian citizens as fictitious lessees and thus become real owners of nearly all the fisheries of the Russian Far East. In 1913 the number of lots leased by Russians was only 26 per cent (the remaining 74 per cent being in the hands of the Japanese); in 1912, 22 per cent; in 1911, 9 per cent; and in 1910, 6 per cent.

The dependence upon the Japanese markets is very harmful, because all the products which are manufactured by Japanese laborers are exported to Japan at a low price. The tendencies of recent years indicate that the fish from the Amur will eventually find steady markets in Central Russia, which will thereby become independent of the Japanese markets. This will be very beneficial to the Nikolaevsk Region, but will be possible only when Russia recuperates and becomes normal again and when it has freed its Far Eastern Shores

from Japanese occupation. According to very recent reports the entire Nikolaevsk Region is now occupied by the Japanese, and Russian fisheries no longer exist there. The principal species in this region are keta and humpback salmon. However, sturgeon, kaluga, dorse, herring, and others are also caught.

In the waters of the Nikolaevsk region on the upper current of the Amur, which in accordance with the Fisheries Convention is accessible to the Russian population, the quantity of the principal kinds of fish caught during 1912 was, in pieces, as follows: keta, 15,997,883; humpback, 7,527,541; herring, 150,000,000.

The civil war that has spread thruout the Russian Far East has entirely destroyed all the fishing industry in Nikolaevsk Region. Canneries and storages were demolished, and the buildings and plants burned. Nearly all the proprietors and their employees were killed. In the whirl of this merciless destruction of the promising fishing industry of this region, many large capitalistic enterprises, as well as a number of peasants engaged in fishing have perished. The present aspect of the fisheries of this region is that of desolation; it is a picture of ruin and there was not even the smallest fragments left of the industry as it once existed.

The Sakhalin Region. The territory of this region includes the waters washing the northern or Russian half of the Island of Sakhalin. Fish constitutes one of the greatest sources of wealth of this island. To its shores come vast quantities of keta, gorbusha, silver salmon, herring, dorse, etc. Some of these species remain along the coast, and the stormy sea very often throws them upon the low sandy beach, forming a wall of fish sometimes from five to six feet high. Others try to reach the rivers in such large quantities that they bar the channels and even obstruct the passage of a boat. The quantities of fish at these places are irresistably attractive to the Japanese. At present nearly the entire fishing industry is in the hands of the Japanese, and the natives and Russian population seek only enough fish for their own needs and fish exclusively in the rivers. The oborigines catch various kinds of seal. The following quantities and kinds of fish in pieces were caught along the eastern and western shores of Sakhalin during two years.

	Keta	*Gorbusha*	*Herring*
1912 (pieces).....	88,186	106,862	14,136,275
1913 (pieces).....	238,830	388,568	3,845,000

Almost the entire catch from this region went to the Japanese market. Russia, therefore, does not benefit greatly by this unlimited wealth. There is no doubt but that if Russia will get out of its present state of anarchy and chaos and start on the road to independent economic development, the utilization of the wealth of Sakhalin will be revived and bring great benefits to the country.

Okhotsk Region. This region includes the northern, western and southwestern shores of the Okhotsk sea. It embodies all the seahore of Okhotsk, starting from the port of Ayan and stretching south to Penzhina Bay. It thus extends over 1,600 miles. There are not many fisheries in this region because of the rigid climatic conditions. The fishing industry has only begun here. Fishing was done principally by the aborigines, but the Russians and Japanese were also engaged in this occupation to a certain extent. The fishing industry is limited here exclusively to the preparation of fish and fish products to supply the needs of the populace and provide food for their dogs. The kinds of fish caught here are the blueback salmon, keta, herring, etc. In addition various kinds of seal are caught, which swim towards the mouths of the rivers in search of smaller fish. Besides those sea products the catching of lamprey was begun in 1910, in the Okhotsk sea north of Nikolaevsk. This fish found a very good local market. The results of a few species in the Okhotsk region for the year 1913 can be seen from the following figures: keta, 1,230,000 pieces; silver salmon, 2,198 and aphua, 17,000 pieces.

The wave of the civil war spread also to the shores of Okhotsk sea, destroying all the Russian fishing in this region. As a matter of fact, fishing does not exist here at present; the region is dead and desolate. The Shantar Islands, which are also included in this region, are famous for their numerous whales which attracted many courageous whale hunters from America in the seventies. According to the reports there were years when more than one hundred American schooners navigated in the waters of the Shantar Islands and in the southern part of the Okhotsk Sea. From Russian statistical data it appears that for fourteen years previous to 1861, the American whalers exported from the Okhotsk Sea whale tusks and oil valued at approximately $87,500,000. In spite of the merciless hunt for whales in this region, these animals are abundant even now.

West Kamchatka Region. This region embraces the western shores of the peninsula of Kamchatka. Until 1890 the fisheries of Kamchatka were conducted exclusively for the purpose of supplying the needs of the local population. In the early nineties the Japanese

came to Kamchatka and began exporting fish which they caught in those waters where only Russians were allowed, or which they bought for a trivial sum or secured from the aborigines in exchange for different kinds of articles, especially whiskey and other liquors. The abundance of fish in the waters washing the shores of Kamchatka is immeasurable. The mouths of the rivers are so filled with fish that there are years when one can scoop them up from a boat. Fish is significant in Kamchatka, being the principal food, and the aborigines and the Russians spend the entire summer fishing and preparing food for the winter for themselves, as well as for their dogs, horses and cows. Commercial fishing is entirely in the hands of the Japanese. In 1910, the Russians had one-fourteenth as many fishing places as the latter and about ninety per cent of the catch was made by the Japanese. The only fish of industrial importance are salmon species, of which six different varieties can be found here. The most valuable, because of their flavor and size are keta, silver salmon, gorbusha, red salmon, red fish, white fish, smelt and others. The yearly output of the principal species of fish in this region for 1913 was as follows keta, 4,469,300; humpback salmon, 27,342,500; blueback salmon, 1,521,200; silver salmon, 101,470; king salmon, 9,500; aphua, 99,600; herring, 100,000 pieces.

Anadyr Region. This region embraces the entire northwestern extremity of Asia, beginning from the mouth of the Anadyr, which is the center of the fishing industry in this region. The fishing industry has no great commercial importance, because it is carried on solely to supply the needs of the local population. Russians as well as aborigines are engaged in fishing here. Keta and gorbusha are the principal fish caught. According to official information, though it is, perhaps, not absolutely accurate, the fishermen in the region of the Anadyr River caught 536,581 big fish of different kinds during the year of 1908. As to the extent of fishing by the local Russian population, we can judge only from the data of 1906, when the Russians, principally the inhabitants of Markovo, prepared 557,000 pieces of keta and gorbusha. We have no information as to the fish caught and prepared by the aborigines in this region. In addition to the above, the inhabitants of these regions catch Pennipedia, such as harbor seal, sea-lion, walrus, etc. The greatest number of sea animals caught are the harbor seal, while the others are caught only in small quantities.

The Chukhotsk Region. Because of the limited quantity of fresh water on the Chukhotsk peninsula, there are comparatively few fish. In the lagoons one can find trout, and in the fall small numbers of cod

and king salmon approach the shores. The fish of this region serve only as food for the aborigines and their dogs, and the products of sea animals such as the walrus, are sold to the American whalers, who often approach the shores of this northwestern extremity of Asia. In no region of Asiatic Russia has fish so important a significance for the the population as here and in the Anadyr Region. Fish here is the only food. An insufficient supply of it for the winter results in famine, followed by disease and dying out of entire settlements.

Commodore Region. This region comprises the shore of two of the Commodore Islands, Bering and Copper, as well as several smaller ones. These islands are not equally well supplied with fish. Because of the lack of rivers on Copper Island, the salmon cannot enter into the fresh water from the sea. On Bering Island the inhabitants fish in two rivers. The principal species of fish caught there are keta, aphua, codfish, mackerel, flounder and others. The entire catch is utilized by the population as food for themselves and their dogs. Codfish are caught principally on Copper Island. The Commodore Islands are important because of the number of sea animals caught, such as beaver and sea bear, which bring a good profit. These animals attract many hunters, who kill them mercilessly, in spite of all measures of prevention and preservation The number of these animals killed is diminishing from year to year, as can be seen from the following data: 8,319 sea bear in 1904 and 738 in 1911; 319 beaver in 1904 and 46 in 1911.

The immediate past of the fisheries in Asiatic Russia serves as a good illustration of depredatory householding with nature's riches. Neither the fishermen nor the government have made an effort to develop or even conserve the immense fishing resources of their country. This is to be expected when we consider that the fisheries of Siberia are run almost exclusively by strangers, whose only object is to get quick returns for their money. As a result of such wasteful methods, fishing resources cannot increase; on the contrary, they are diminishing rapidly, and even now complaints are being heard from all parts of the country that the supply of fish is growing less from year to year.

With a rational and frugal management, with careful and wise methods, the life of Siberian fishing resources can be prolonged indefinitely. If not, Siberia may share the fate of Japan which at one time was tremendously rich in fish, but whose present deficiency in this important food product is causing it to press into the domains of Russia's natural resources.

CAUSES OF DECLINE

From all of the preceding statements there arises a natural question as to what has impeded Russia's progress and hampered its development of fisheries in Siberia in the past. Among others, we may mention the fifteen following reasons: (1) Depredatory attitude of the Russian industrials. (2) Lack of culture of the population. (3) Primitive technical methods. (4) Absence of initiative among Russian business men. (5) Lack of capital. (6) Scarcity of population. (7) Poor means of communication. (8) Absence of refrigerators. (9) Scarcity of steamers and poor shipping facilities. (10) Lack of economic development. (11) Shortsighted policy of the Czar's government. (12) Careless conservation of the piscatory riches. (13) Very limited supply of skilled workmen. It may be well to mention here that the Czar's government allowed the Russian tradesmen to employ only a limited number of foreigners. Russian workmen could not be obtained, and it was too expensive to bring men from Europe. On the other hand, Japanese tradesmen were able to obtain any amount of cheap labor from Japan. In view of these facts, it was very difficult for the Russians to compete with the Japanese, and business in the hands of the former was in a very poor state. (14) Insufficient supply of good salt. There is almost a total absence of saltworks in the East, the nearest salt fields being found in the Transbaikal and the Irkutsk provinces, but the freight expenses are so high that the idea of utilizing Russian salt in the Far East is inconceivable. The Russian is compelled to buy Japanese salt of low grade at a high price, which has placed him at a disadvantage. There have been instances where a big catch of fish had either to be thrown away or sold for an insignificant sum to the Japanese. (15) Japanese control of the fisheries as well as the markets.

THE FUTURE

The fishing industry has recently begun to reform, and to take on the character of a capitalistic enterprise, exporting the Siberian fish according to modern methods. Modern canneries, salting stations, factories for utilizing the fins and other by-products, have been opened; refrigerators are being built, and connections are being worked out with the world-markets. But the Bolshevist revolution, the collapse of the Russian industries, the arrival of unbidden guests, foreigners who showed but little interest in the development of Russian industries, and who were more inclined to make an easy living, have no doubt helped to kill these promising young sprouts of

Fig. 1. Along the waterfront of a Siberian fishing village

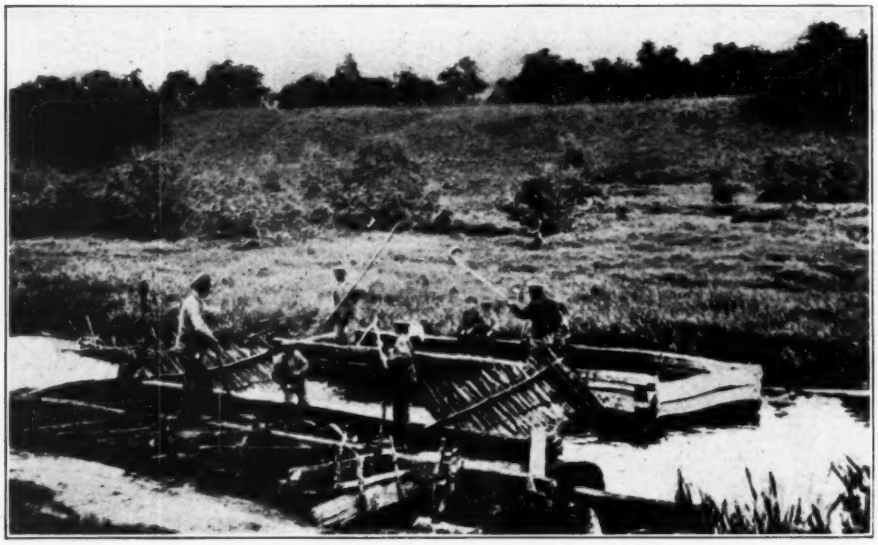

Fig. 2. A fish trap in a small Siberian stream

the Siberian fishing industry. At present this enterprise is undergoing a very grave and serious crisis. However, Siberian fish have all the prospects of becoming a world known product because of abundance and high quality. Good evidence of this can be found in Alaska. merely wasted and the fish were untouched. But when that territory came under the rule of the United States the genius of the American people transformed industrial life and quickened it. The fishing Under Russia's jurisdiction the natural resources of the country were industries attained more gigantic proportions than Russia would have dreamed possible. We must take into consideration that some parts of Siberia are many times richer than the entire territory of Alaska, both in abundance, variety and quality of their fish. Russia

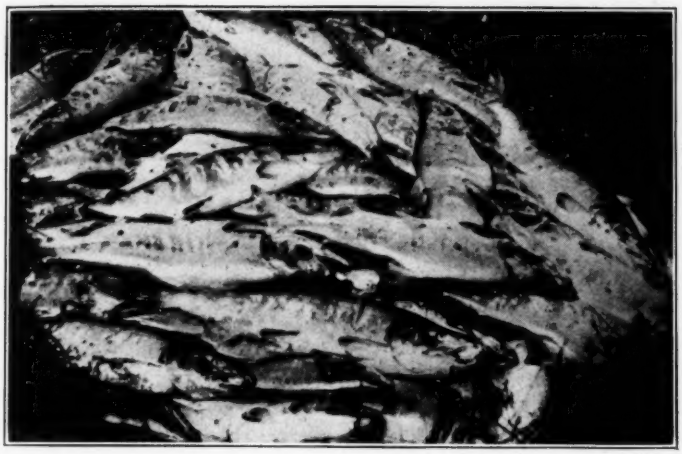

FIG. 3. Typical Siberian fish

could in fact supply the whole world with its fish if only it could undergo a complete regeneration in its methods of extracting and shipping the products. I have no doubt that in the near future America will take a leading part in the regeneration of this industry, and that the genius of its people, the initiative of its business men, its large number of specialists and its rapidly growing merchant marine, will aid materially in the development. This will be as profitable for America as it will be uplifting for Russia. With this aid from America the fish of the Russian Far East will no longer be shipped to Japanese fields as cheap fertilizer, but will find their way to all the markets of the world as a product of high quality.

SOME CONTRASTS IN THE GEOGRAPHY OF THE VIRGINIA PIEDMONT AND THE ILLINOIS PLAIN

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The Virginia Piedmont and the plain of Illinois represent two agricultural sections of our country. While they are alike in some respects, the differences are great enough to attract the attention of the most casual observer, the conspicuous contrasts being those of topography and soil and the consequent human response. To one who is accustomed to the monotony of plains such as those of Illinois, the undulating surface of the Piedmont, with its numerous slopes, many of them still wooded, others yellow with grain or green with meadow grass, is truly attractive. To give variety, here and there are great gashes in the covering of vegetation where erosion has gained the mastery, revealing the bright brick red soil—gaping wounds in the side of Mother Earth. By taking two counties as typical of the territory they represent—Prince Edward County of Virginia and Champaign County, Illinois—the following comparisons may be made with greater exactness.

CONTRASTS IN TOPOGRAPHY AND CLIMATE

Prince Edward county, Virginia, lies midway between the Fall Line and the Blue Ridge in the region known as the Piedmont, or, to Virginians, as Middle Virginia. Farmville, the largest town and the county seat, is on the Appomattox river nearly sixty miles from Richmond on the east and about forty miles from Lynchburg on the west. The southernmost part of the county is in latitude 37°5′—about 180 miles farther south than the southern limits of Champaign County.

While the climate of this section is much like that of Illinois, the geographic position, and to a slight degree, perhaps, the lower altitude, give summers a little hotter, winters not quite so cold, longer spring and autumn seasons, and slightly heavier rainfall distributed somewhat more evenly thruout the year. The high summer temperature, long growing season, and abundant rainfall are characteristics which make the climate one of the greatest assets of the state.

Mr. Thomas L. Watson, State Geologist of Virginia, has described the topography of the Piedmont Plateau Province as one "of a more or less smooth, broadly rolling or undulating upland, of moderate elevation into which the streams have rather deeply sunk their chan-

nels. Scattering hills and ridges—unreduced residuals—rise in some cases several hundred feet above the general level of the upland surface of the plateau. Below the upland surface, deep and narrow gorges have been carved by the streams."[1] No conspicuous elevation is found in Prince Edward County, its highest point being only 715 feet above the sea, about 200 feet above the upland and less than 465 feet above the lowest point along the Appomattox river. Higher elevations do occur in the vicinity, however, such as Willis Mountain, Buckingham County, which rises to an elevation of 1159 feet and whose rugged outlines can be clearly seen from Farmville about twelve miles away. It is not only in the greater amount of relief, but in the greater number of streams and slopes that the topography of the Virginia section differs from that of Illinois. The largest square field without a permanent stream that could be laid out in Prince Edward County would contain but little more than one square mile, while a similar area in Champaign County would cover at least eighteen square miles.

CONTRASTS IN USES OF LAND

This contrast in topography helps to explain the difference in the use of the land in the two regions. In 1920 less than thirty-two per cent of Prince Edward County was improved farm land while Champaign County reported 88½ per cent of the area as such. The reverse is true, however, in woodland in farms, forty per cent of the area of Prince Edward County and one and one-half per cent of Champaign County being given as farm woodland. The response to this difference is in the use of wood for fuel. In this section of Virginia every back-yard has its pile of stove-wood and trade in cord-wood is considerable to furnish fuel for the kitchen stove and to feed the small sheet iron air-tight heaters that are in common use there. Such a stove would be a novelty in Champaign County, while a load of cord-wood is seldom seen.

CONTRASTS IN TRANSPORTATION

The roads respond to the type of topography found in the Piedmont by clinging persistently to the summits of the upland ridges between the streams, an occasional one following the ridge so continuously as to be known, locally, as "the ridge road." In the rougher sections, as in the vicinity of Willis Mountain, where the road must cross the narrow valleys, the frail wooden bridges are frequently carried away

[1] Mineral Resources of Virginia, 1907, pp. 5-6.

by freshets, after which, until the bridges are repaired, travelers cheerfully ford the creeks tho they may be ten to fifteen feet wide and offer a drop of from one to two feet from the road to the stream bed. In order to take advantage of the best grades the roads are very crooked, many of them requiring a drive of perhaps seventeen miles to reach a point twelve miles distant. Some of the roads are hard-surfaced for short distances near the larger towns, but, for the most part, "dirt" roads prevail.

Travel over the roads is done in almost every conceivable way. On Saturday afternoon when the country people are returning from town, one can see people on foot and on horse or mule-back, one and two-horse farm wagons, single and double buggies, automobiles, and even the faithful ox, driven sometimes single, sometimes double, and attached to a farm wagon, two-wheeled cart, or, rarely, to the more aristocratic light buggy. The possessor of the ox is more often colored, that element forming fifty-five per cent of the population of the county in 1920, but many of the less prosperous whites find in the ox their greatest help. It is easy to contrast with this the many miles of nearly level hard-surfaced road of Champaign County, extending over the country in a straight line for miles and traversed by little but the speedy automobile.

CONTRASTS IN SOILS AND PRODUCTS

The most conspicuous difference in soil between the Virginia Piedmont and the Illinois plain is one of color. The crystalline gneisses and schists of the former region contain iron-bearing minerals which give rise to a bright brick-red colored soil in the advanced stages of weathering. Here and there are patches of lighter colored soil which represent the earlier stages of weathering in which disintegration has taken place more than decomposition. These soils are mostly of clay with a compact subsoil which does not allow ready absorption of the rainfall, and which results in relatively rapid erosion on even the more gentle slopes such as are not seriously affected in Illinois where made of the looser textured glacial drift. Many years of leaching by the weather, rapid erosion, and continuous cropping of tobacco have impoverished the soil to such an extent that a large use of commercial fertilizer is necessary. On farms reported to the census enumerators in 1920, $147,790 was expended for fertilizer in Prince Edward County as against $33,326 for Champaign County which is nearly three times the size. The contrast in topography and soil between the two regions is further reflected in the valuation of the

land, the average land value per acre in 1920 being $25.11 and $339.07 respectively, for Prince Edward and Champaign Counties.

In each section agriculture is the predominant industry, eighty-two per cent of the population of Prince Edward County being rural in 1920 and fifty-two per cent of Champaign County. Corn is the most important crop in acreage in each case, that cereal occupying thirty-five and fifty-two per cent, respectively, of the cultivated land. The more favorable geographic conditions for corn production in the latter county are indicated not only in the larger acreage, but also in the average yield per acre, which is nearly three times as great as in Prince Edward County.[2] The importance of oats in the corn producing regions where it fits into the labor economy of the farmer is shown in Champagin County in which it occupies second place in acreage, wheat third, and hay and forage fourth. In the Virginia section hay and forage occupy second place with tobacco, the great money crop, as third in acreage. Tobacco is also the labor consuming crop, the quality depending not alone on soil and weather conditions, but much on the kind of attention given to it during its growth.

Topography, soil, labor requirements for crops, and the price of labor are some of the factors affecting the size of farms. It is interesting to note that in Virginia where the rough topography interferes with the most economical use of large machines and where tobacco, which requires a great amount of hand labor is a leading crop, the farms average less than 100 acres. This is a decrease of six and two-tenths acres per farm since 1910, probably in response to the recent high price of labor. In Champaign County where machinery can be used satisfactorily the farms have an average size of 165 acres, a slight increase over the figures of 1910.

CONTRASTS IN WEALTH

The greatest consequence of the geographic conditions noted is the respective wealth of the two sections. The prosperity of the Illinois plain is an established fact to the Virginian, tho the Illinois farmer may not realize his good fortune. The difference is easy to distinguish, however, in either section after a sojourn in the other. The well-tilled, generally level fields of Illinois with a rank growth of crops almost continuous as far as the eye can see, the good straight roads, and the modern and spacious farm buildings present a striking contrast to the wooded or waste slopes interspersed with cultivated fields, some of them offering the prospect of an uncertain yield, the

[2] The proportion is 42:15.

winding roads, and the many small and poor farm buildings of the Virginia Piedmont. In delightfulness of climate, especially the extended spring and autumn seasons, and in beauty of scenery the Virginia Piedmont far surpasses the Illinois plain, but it does not compare with it in material prosperity.

CUBA, HAITI AND SANTO DOMINGO

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CUBA

Most of the islands of the West Indies fall into one of two classes: (1) those that are mountainous and have heavy rainfall on their slopes; (2) those that are low and have so little rainfall as to be almost desert. Cuba, the largest island of all is exceptional in that it is

FIG. 1. Sketch map of Central America and the West Indies

predominantly lowland, with great expanses of fertile plain but is sufficiently high and broad to obtain a moderate precipitation from the moisture laden trade winds.

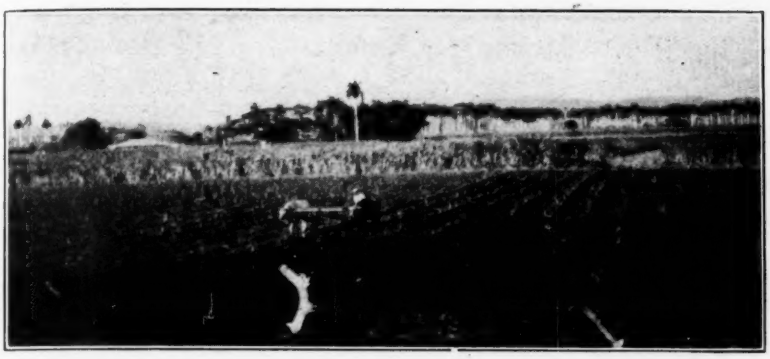

FIG. 2. Plowing a cane field in Cuba

FIG 3. View of typical cane field in Cuba

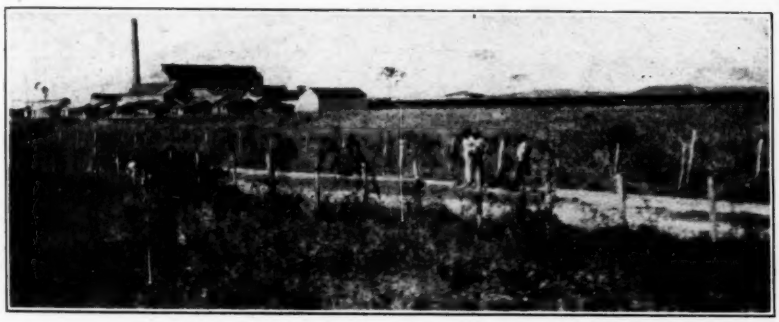

FIG. 4. A Cuban sugar mill

Cuba is about as large as all the other islands of the West Indies taken together.* Moreover a comparison of its fertile plains with

Fig. 5. A Cuban tobacco field

Fig 6. A pineapple field

the rugged mountains and desert lowlands of other islands leads to the conclusion that its productive resources are even greater than mere size would indicate. Its commerce is five times as great as that of all the other islands together. It is less densely populated than any other important island in the group and its undeveloped resources probably are greater than those of all the other islands combined.

The plains of Cuba are almost ideally suited to one particular crop. Sugar cane can be most efficiently produced on land which has fertil soil and which is not too rough for the use of farm machinery. It needs a growing season of almost twelve months, and no

* Cuba, 44,128 sq. miles, other islands 45,882.

frost, if it is to come up year after year without replanting. It yields best where there is plenty of moisture during the period of growth, and a relatively dry season at the time of ripening to decrease the growth of leaves and the water content of the cane. These conditions are present in Cuba.

The most characteristic Cuban landscape is a rolling plain, carpeted with light green cane as far as the eye can see and dotted here and there with the dark green plumes and the straight white stems of royal palms and at greater intervals with the smoke stacks and red roofs of modern sugar factories.

FIG. 7. Hay and pasture land in Cuba

There are, however, other scenes in the 700 miles of Cuba's length: tobacco fields in the western end of the island, highly developed and highly productive; vegetable gardens and fruit groves in the district near Havana; cattle ranches in the newer country farther east; mines and lumber camps in the mountains at the eastern extremity.

Sugar makes up about seventy-five per cent of the value of Cuban exports, and tobacco fruit, hides, minerals, timber compose about twenty-five per cent. These other products do not conceal the fact that in general Cuba is a specialized commercial country, producing sugar for the United States, and buying in exchange food, clothing, and a great variety of the commodities of modern civilized life.

HAITI AND SANTA DOMINGO

The island of Haiti and Santo Domingo is composed of four parallel mountain ranges extending the length of the island from east

to west, and of three more or less continuous lowlands between the ranges.

The political boundary between Haiti and Santo Domingo extends from north to south, cutting across these ridges and lowlands apparently without regard for major natural features.

On the Haitian side of this boundary is a country densely populated by French speaking Negroes, with living conditions and social and political conditions of a very primitive sort, with productive enterprise in a stage of exploitation of wild crops rather than of agriculture, and with very little commerce.

On the Dominican side of the boundary is a country sparsely populated by Spanish speaking white people and mulattoes, with Spanish American traditions and standards, with some agricultural development, including some large capitalized enterprises, and with considerable commerce.

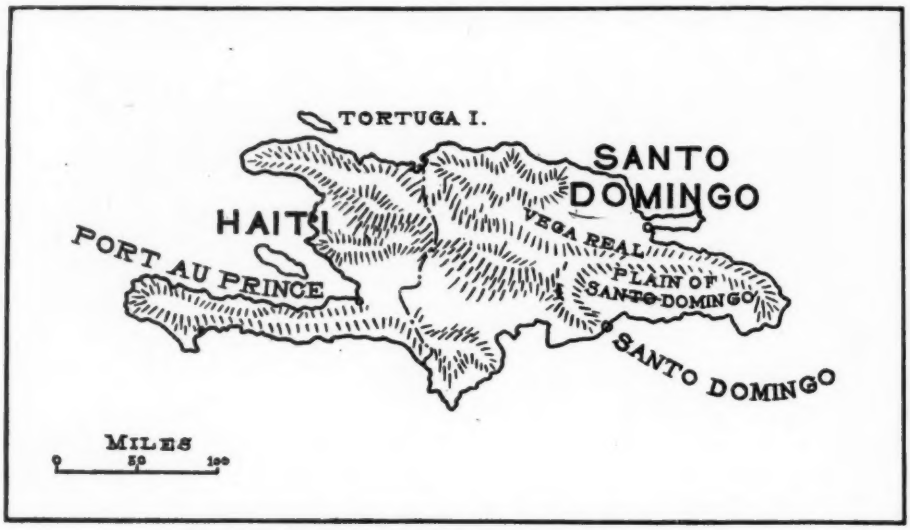

FIG. 8. Sketch map of Haiti and Santa Domingo

These contrasts in development have their roots in the past and are related to natural environment only indirectly and incidentally.

The trade winds bring moisture to the northern and eastern slopes, leaving leeward slopes and lowlands in a condition of semi-aridity.

Of the major lowland areas of the island, two receive sufficient rainfall for agriculture without irrigation: the Vega Real in the northeastern part of the island and the plain of Santo Domingo in the southeastern part. The first of these lowlands was found and named by Christopher Columbus, and as a result of his enthusiastic report

it was soon occupied by Spanish settlers. The second is less well watered, but on its shore is the river mouth harbor of Santo Domingo, which was chosen by Columbus as the site of his capital in the New World. Thus the centers of Spanish occupation were in the eastern part of the island. In this part also a little gold was found, and it was in search of gold that Spaniards came to America.

Santo Domingo flourished for a while and then declined, as fortune hunters moved on to richer lands, rather than staying to develop agricultural possibilities. Meanwhile the western part of the island was unoccupied. In the course of time French pirates established themselves on Tortuga, a small island off the north coast, and thence French influence extended to the larger island and resulted in centers of French occupation in the west at several places on the coast.

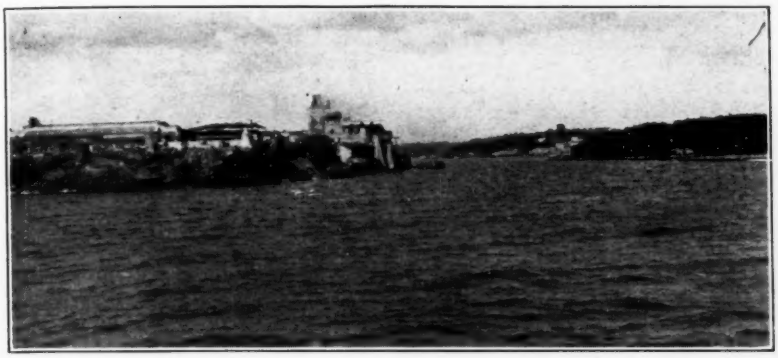

FIG. 9. Harbor mouth at Santa Domingo, the oldest city in America, founded by Columbus as his capital

The western lowlands are semi-arid, but there are streams from the mountains which make irrigation possible, and the French in contrast to the Spanish, were interested in agricultural possibilities. Great plantations were developed for the production of sugar with Negro labor, and Haiti became a garden spot.

Early in the nineteenth century a successful slave uprising drove out the handful of white people who ruled Haiti and the country became independent of foreign control, and for more than a hundred years was a place of disorder, at the mercy of Negro chiefs, without security for life and property, without a native population able to progress, and without incentive for foreign interests to enter. The reign of bloodshed was brought to an end in 1915 by the landing of American marines, and American occupation continues, not arousing

either much opposition or much appreciation among the simple, ignorant, unprogressive Negro masses.

The Spanish settlements in the eastern part of the island also became independent in the nineteenth century, and the Dominican Republic had a career of Spanish social order and political disorder, until American intervention in 1907. Since that time, assurance of stability has led to the development of productive enterprise by foreign capital, altho the American marines in the last few years have not endeared themselves to intelligent and self-respecting Dominicans, who resent this domination.

Haiti and Santo Domingo are similar in their physical aspect, and the boundary between them is merely a line drawn across the unoccupied portion that lies between the two centers of population. They are dissimilar however, in development, and there are very different problems involved in dealing on the one hand with a densely populated negro country and on the other with a sparsely populated Spanish country.

AROUND THE WORLD ON THIRTY-SIX THIRTY

P. O. Selby
State Teachers College, Kirksville, Missouri

I am the line of Thirty-six Thirty. In capsule form you may write my name 36°30′N. I run around the earth, crossing four of the six continents and I visit many interesting places. I invite you to put on your circumnavigating clothes (your atlas or globe) and travel with me.

I broke into history a hundred years ago by becoming the dividing line between free territory and slave territory west of the Mississippi River. This was the Missouri Compromise of 1820, but the state of Missouri was an exception to this, for I form the southern boundary of Missouri most of the way. But there is a small peninsula or "panhandle" of Missouri which extends as far south as Thirty-six degrees, so Missouri is that much a southern state, and I cross two counties in Missouri.

Let us start east on this boundary line between Missouri and Arkansas. This is the Ozark country and a region of pleasant, low, round mountains one thousand to two thousand feet high. By crossing the St. Francis River we enter the state of Missouri and we leave Missouri at the Mississippi near the small city of New Madrid, the

center of a violent earthquake in 1811. This is low country—swamps and drained land.

TRAVELING A STRAIGHT LINE HAS DIFFICULTIES

We have some difficulties with the Mississippi River. We cross from Missouri to form the boundary between Kentucky and Tennessee. But we come across a loop in the Mississippi, and crossing the river again we are back in Missouri. But this is only for two or three miles and we come to the Mississippi, and crossing the river again become the Kentucky-Tennessee boundary once more. Here we find ourselves near Island No. 10, the scene of a battle between Union and Confederate forces on April 7, 1862. Before its capture General Grant and the Union forces cut a canal a few miles to the north from one bend in the Mississippi to another and passed gunboats down the river without passing Island No. 10.

Proceeding east on the Kentucky-Tennessee boundary we come to Reelfoot, a large lake principally in Tennessee. In times of high water this lake becomes part of the Mississippi River. On east we go, separating the small, pleasant city of Fulton, Kentucky, from South Fulton, over in Tennessee. A hundred miles east of the Mississippi we strike Fort Henry on the Tennessee River, captured by Union gunboats February 6, 1862. A jog in the boundary line causes us to enter the state of Tennessee. Only twelve miles east of the Tennessee River at Fort Henry we cross the Cumberland River at Fort Donelson, which was taken by Union forces February 16, 1862, after a three day's battle. We cross the Cumberland twice more within a few miles, do not see anything of it then for twenty miles, then we cross it for the fourth, fifth, sixth and seventh times near the city of Clarksville. On east we go, getting into higher and rougher country and cross the Cumberland for the eighth time. The river appears much smaller than we first saw it, for traveling east is going upstream on the Cumberland. But we are not quite thru with this river, for a little farther on we cross the South Fork of the Cumberland, but this is not the main part of the river.

We are ready now for the Alleghany Mountains and we have many ridges to climb and valleys to descend.

We leave Tennessee at the Stone Mountains to enter North Carolina. Soon we cross the Blue Ridge at an altitude of 3,000 feet but we hurry on to lower ground. We cross the Dan River which we recross later after its name has been changed to the Roanoke River. The state of Virginia is less than five miles to the north. Before we get

quite across North Carolina we plunge into the Dismal Swamp, which is much like the Panhandle of Missouri—not much use until it is drained; when drained it is very valuable land.

Across the Atlantic

Leaving North Carolina we plunge into the Sound, swim across to that narrow strip of land which protects so much of our eastern coast, and then we plunge into the Atlantic Ocean.

And it would be a sure enough plunge if you went with me to the bottom, for not many miles off the coast the ocean along Thirty-six Thirty is ten thousand feet deep. However, you may prefer to skim the waves rather than submerge, so we will skip across the ocean wondering what we may see and where in Europe we shall make port. We pass the Bermudas two hundred and fifty miles to the south and the Azores one hundred miles to the north.

We approach the coast of Europe. Do you think we will come to land in England, in France, or maybe in Portugal? In none of them, for Thirty-six Thirty is far south in Europe and we go south of England, France and Portugal and into the harbor of Spain's southernmost Atlantic harbor, the city of Cadiz. This handsome city is a great center for foreign trade in wine, olives and cork, but we hasten on across Spain and cast off into the Mediterranean Sea.

A Taste of Africa, Europe and Asia

Three hundred miles east we are cast up on the rocky and rather hostile shores of Algeria and hurry on. At Blida and at Constantine we may see something of the life of the Algerians. We enter Tunisia, pass near the site of ancient Carthage, transverse Tunis, the provincial capital, and after contemplating the rocky coast for a few miles, again shoot out into the Mediterranean.

Our next landing is on one of the two southernmost peninsulas of Greece, a rocky, mountainous region about ten miles wide. Then we're off into the Gulf of Laconia and then on to the other peninsula which represents Farthest South in the Greek mainland. Again we plunge into the Mediterranean, pass near many islands and finally bring up on what is the fourth continent for us, Asia. We are near the southern side of Asia Minor and in crossing this large peninsula we get wet, twice more, in arms of the Mediterranean, the Gulfs of Adalia and Alexandretta. But finally we land in the district of Aleppo and have ahead of us six thousand miles of land.

Proceeding ever eastward we cross the Euphrates, farther on we cross the Tigris, strike some very high mountains, cross Persia, skirt the Caspian Sea eighty-four feet below sea level, get into Russian Turkestan for a time, cross Afghanistan, visit the most northern extension of India, and greet the Chinese in their desert territory of East Turkestan. Fifteen hundred miles of mountain and desert lead us into Tibet where we find salt swamps and small lakes. Seven hundred miles more and we enter China proper, cross the Hwang-Ho or Yellow River twice, ending up in the Shantung Peninsula, over which there has been so much discussion.

Crossing the Yellow Sea we arrive at Korea, known more properly as Chosen since the Japanese occupation. Out into the Sea of Japan we continue. I wonder if you think like so many people that Thirty-six Thirty will go south of Japan because that is a northern country? If you do, you are mistaken, for we cross Japan almost in the middle, and south of us, not north, is the great land bulk and four-fifths of the population.

HOMEWARD BOUND

Leaving Japan there is nothing to see until we reach the United States except the Pacific Ocean. It is a vast expanse and following a straight line like Thirty-six Thirty is not the shortest way across as you might see by putting a string along a globe.

Now to get back to our starting-point. We land on the friendly tho rough coast of California five miles south of Monterey, cross the Monte Diablo Range, the marshy King River and Sequoia National Park where are found the giant trees. Then we climb Mount Whitney, highest peak in the contiguous United States, swim beautiful Owens Lake, and strike an assortment of table lands and desert valleys including Death Valley, 427 feet below sea level, the lowest region in the United States.

Next we cross the southern end of Nevada and into Arizona. Here we find Marble Canyon, of the Colorado River, northeast of the Grand Canyon. Farther east we find the reservations of the Navajo and Moqui Indians. We come next to New Mexico where we cross the Rocky Mountains and the Rio Grande River. Leaving New Mexico Thirty-six Thirty becomes the boundary between the Texas Panhandle and the Oklahoma Panhandle where it is always dusty and the wind blows forever. In crossing Oklahoma we see varied farming land till we reach Osage County. This big county, the home of the Osage Indians, who are still government wards, is the heart of the Kansas-

Oklahoma oil fields. It is a center of great prosperity and wealth. A few more miles farther east and we are back to our starting point, the corner of Oklahoma, Missouri and Arkansas. If you like this kind of travel and exploration you can take other parallels, such as the Thirtieth, the Fortieth, or the Forty-ninth, and follow them around the world thru many interesting and varied scenes.

USING MOTION PICTURES IN COMMERCIAL GEOGRAPHY

O. W. FREEMAN
High School, Stockton, California

Visual instruction as an aid in teaching geography needs no defense or elaborate arguments in its favor. One has only to visit classes where visual instruction is used to realize its advantages. The greatly increased knowledge and interest of the pupils is most noticeable.

The writer has experimented with lantern slides, opaque projection and the motion picture. All have their advantages. Lantern slides are of most use where it is desired to emphasize certain particular things that require considerable oral explanation as the slides can be left on the screen as long as desired. Pictures suitable for opaque projection can be easily secured from postcard collections, magazines and books but it is often difficult to secure views that will tell a continuous story. The motion picture is far superior to slides and opaque projection in telling a continuous story and maintaining the child's interest. It also seems easier for the child to remember what he has seen in the "movies" than from stationary pictures.

There are about two hundred high school boys and girls taking economic geography from the writer as a required part of their commercial course. Before entering the class there were numerous complaints about being compelled to take it. Some thought it would be useless when they became stenographers or "got married." Some protested that they had never liked geography and others, usually mediocre students, claimed that as they had passed public school geography they already knew enough. In our classes one day a week is devoted to visual instruction and the motion picture is used most of the time. The writer makes no apology for using one fifth of the class periods in this way as the results obtained fully justify it. The vast majority of the students, including most of those who had previously objected to enrolling in the course, become very much interested in the subject and see the reasons for taking it, and as a result the percentage

of failures is greatly lessened. It is also certain that the children learn and remember more on the average from picture day than from any other single day of the week.

A child can read a description of a manufacturing process, methods of farming, the customs and manner of life in foreign countries, etc., and get a most inadequate idea of the subject as he has nothing to compare it with, but let him see the thing with his own eyes and he remembers it. In many respects the motion picture of a manufacturing process is superior to visiting a similar plant with the class. It takes less time and the average person gets a better idea of the continuity of the process. It is very difficult in a factory to talk loud enough for the whole class to hear, and there are often departments that are dangerous or unpleasant to visit and so are slighted. Often a considerable part of a class will come home from a factory trip with quite a vague notion of the "what and why" of the processes seen. The writer believes in field trips and some of the class get much out of them, but at the best each community has only a few industries worth visiting, while the motion picture brings the whole world into the class room.

At times we have been successful in securing salesmen and others to lecture to the classes in commercial geography on the raw material and processes of manufacture of their product. For example this year we heard talks on hats, shirts, fountain pens and "virgin wool" cloth. We also have a considerable collection of exhibit material furnished by manufacturers. The exhibit material has its uses but where supplemented by motion pictures as it was in some cases it proved far more intelligable and useful.

For the class to get the most out of the motion pictures it is necessary for the instructor to add comments of his own to the brief sentences flashed on the screen. The showing of the picture will naturally cause numerous questions. The answering of these and the supplementing of the film by a discussion led by the teacher along lines suggested by it are better ways of using any time left in the class hour after showing the film than by set class room work. The teacher can as consistently expect a child to answer questions both orally and on written work based on the films he has seen as on the textbook he has studied, but the wise instructor will avoid requiring detailed written reports based on the films which might deaden the interest in them.

SOURCES OF MATERIAL

The most satisfactory form of projector for class room use is one of the several portable machines on the market that use a powerful

filament lamp in preference to a big projection machine or one using carbons. It can be connected to an ordinary lamp socket and it may be used by many different departments in the school.

There are many different sources of satisfactory films that can be secured for school use in geography. Most of the leading film companies issue travel and industrial films, some of which are very good, but have the objection of costing more than some school boards can afford. One seldom comes in conflict with the local theater magnate when renting travel and industrial films, as a teacher may if he starts out presenting feature films to the school children and general public at a reduced price, with the probable result that the local theater man complains to the film supply house and the teacher's films are cancelled on short notice. Certain companies make a specialty of supplying schools and churches with films and some good topics can be secured from them. Recently a series of films on the regional geography of the United States has been prepared which is highly educational.

The University of California maintains a Department of Visual Instruction as a part of its Extension Division from which films and slides on a great variety of subjects can be secured free or at a very nominal cost. Several other states have a somewhat similar arrangement but unfortunately the majority of our states and state universities do not yet maintain such a service for the benefit of the public schools. If there is an insistant demand from the teachers in need of such service, however, it would hasten the establishment of such bureaus in all the states.

Among the most useful sources from which the teacher of high school commercial geography can secure films are certain of our large industrial corporations. Most notable of these is the Ford Motor Company, which has published scores of different films on history, agriculture, civics, travel, regional geography and industrial geography. These are loaned to schools and also sold at moderate rates. The General Electric Company also has published a very elaborate series of films that are of interest to students in geography and in vocational lines. The International Harvester Company, several tractor companies, a fountain pen manufacturer, silk mill, shirt maker, woolen mill, rubber manufacturer and many other private companies have prepared excellent films along their particular lines for advertising and educational purposes which they are usually willing to loan to schools free of charge. In some cases a lecture and even a lecturer is furnished along with the films.

Numerous departments at Washington have made films of interest to commercial geography classes. Many of these films are loaned to schools. Among the best of these are films on petroleum, sulphur and various other mining industries by the Bureau of Mines. The United States Geological Survey, Forest Service, Department of Agriculture, etc., have also made films that are worth seeing.

Many of the railroads, especially western lines, have prepared films for advertising and propaganda purposes that show the scenery, agriculture, mining, stock raising, chief cities, etc., tributary to their lines. State Departments of Immigration, various counties, city Chambers of Commerce and the like have recognized the advertising value of the motion picture in attracting settlers, investors and tourists and have gone to much trouble and expense in preparing accurate, attractive films which they are usually glad to loan to schools.

If one has the use of a motion picture machine, even if funds are short for the renting of films, it is entirely possible to secure films for nothing (except the express charges) which will add tremendously to the interest of the class and greatly increase the value of public school geography and high school commercial geography. The motion picture is in our schools to stay and will have a wonderfully broadening and stimulating effect upon our future education, especially along geographic lines.

GEOGRAPHICAL INSTITUTE AT THE STATE NORMAL SCHOOL, SALEM, MASSACHUSETTS

MABEL C. STARK

An important period in the geographical training of the normal school students and the training school pupils of the Salem Normal School culminated in the Geographical Institute held all day Friday, April 21, and Saturday morning, April 22, 1922. The Institute was planned primarily for the purpose of giving intelligent assistance to nearby teachers and superintendents in their study, teaching and supervision of geography. Preparation of the various exhibits displayed and of the lessons given furnished also the motive for many worthwhile projects in the Normal and Training School.

The Institute endeavored to cover the important phases of academic and professional geography by means of a careful apportionment of topics and projects among the ten groups of normal school students studying geography, the eight grades of the Training School, and the

visiting speakers on Saturday morning. The accompanying announcement shows this adjustment in a general way.

Two weeks before the dates scheduled for the Institute about 500 of these announcements, together with a personal letter, were sent to superintendents, principals, and teachers in the region readily adjacent to the Salem Normal. The response to this invitation was gratifying indeed to those interested in better study and teaching of geography. Between 400 and 500 visitors literally deluged the Normal and Training School on Friday to attend the schedule of classes in session, and between 200 and 300 were present at the Saturday morning program of addresses. The exhibits were available for examination on both days and were left in place for almost a week longer as visitors continued to come. Large delegations came from Amesbury, Haverhill, Lynn, Newburyport, Gloucester, Rockport, Hamilton, Malden, Stoneham and Salem. Beverly, Cambridge, Boston, Worcester, Springfield, Ipswich, Lexington and many other cities and towns were represented. The newspapers of the area, especially the *Salem Evening News*, *Boston Transcript*, *Boston Herald*, and *Christian Science Monitor*, were generous in their preliminary notices of the Institute and in their report of the same.

The seniors in the Commercial Course had been appointed the "official" escorts of the day, but when the guests arrived in unexpected numbers other students did not wait to be so delegated but assumed the role of host, met and guided the visitors with ease and courtesy. Indeed, one of the most illuminating aspects of the Institute was the pleasure the students manifested in discussing the exhibits of their work with the visiting teachers and their appreciation of the interest and cordiality shown by the visitors. In retrospect the comments of the students ran somewhat as follows: "Didn't we have a good time—those visitors asked *us* questions—they took *notes* on *our* work—they even *read* our outlines, etc."

PROGRAM

Friday, April 21, 1922

SCHEDULE OF GEOGRAPHY CLASSES IN SESSION AND GENERAL TOPIC OF LESSONS

TRAINING SCHOOL

9:00– 9:45	Grade 1	Miss Batchelder
	Life on a New England Farm	
9:45–10:30	Grade 2	Miss Wade
	Eskimo Life	
	Grade 7	Miss Small
	Introductory View of India thru Pictures	

10:30–11:15	Grade 3	Miss James
	Shepherd Life [The Bedouins]	
11:15–12:00	Grade 4	Miss Willey
	The Swiss People and their Country	
	Grade 6	Miss Jellison
	Glimpses of European Life [Based on Supplementary Reading]	
1:30– 2:15	Grade 5	Miss Perham
	The North Pacific Region [Introductory Lesson]	
	Grade 8	Miss Emerson
	Influence of Transportation upon the Industrial Development of the American Interior	
2:30– 3:30	Dramatizations	Assembly Hall
	Travel Tales of Old and Modern Salem	
	Seafarers	Grade 4
	Other Tales from Faraway	
	The Eskimos	Grade 2
	A Bedouin Tale	Grade 3
	The Swiss	Grade 4

NORMAL SCHOOL

9:40–10:25	Junior II	Miss Stark
	Our Estimate of the best Supplementary Readers to use in teaching the "First Glimpse of the World Whole" in the Lower Grades	
10:30–11:15	Intermediate Middle Class	Miss Flanders
	Interpretation of a Geographic Region of South America	
11:20–12:00	Commercial Seniors	Miss Stark
	Our Experience in Collecting a Commercial Museum	
1:05–1:50	Commercial Freshmen	Miss Flanders
	A Conservation Problem	

Saturday, April 22, 9:30 A. M.

1. Italy—A Problem for Sixth Grade Foreign Boys
   Miss Lura A. Chase,
   Elliot School, Boston
2. Teaching of New England by the Project Method
   Miss Louie G. Ramsdell,
   State Normal School,
   Framingham, Massachusetts
3. Teaching Geography to Children
   President Wallace W. Atwood,
   Clark University,
   Worcester, Massachusetts

GEOGRAPHICAL EXHIBITS

Available for examination on both days

TRAINING SCHOOL

Grade 1. Home and Community Activities and Interests
Grade 2. Life in the Eskimo Country
Grade 3 Life in the Hot Deserts
Grade 4. Human Types of Other Lands (Swiss, Filipino)
Grade 5. Geographic Regions of United States
New England
Southern California

Grade 6. Travels in Europe
Grade 7. Britain, a Great Commercial and Colonizing Nation
Grade 8. Foods of the United States

NORMAL SCHOOL

I. Phases of Geographical Work Exhibited
  1. Method in Geography for Lower Grades
    (1) Local Geography (Junior I & III)
      The Salem Region
    (2) Observational Geography (Junior I & III)
      Records of Weather, Sun, Moon
    (3) First Glimpse of World as Whole (Junior II & IV)
      Human Types of Many Lands
  2. Regional Geography for Upper Grades & High School
    (1) Climatic Regions of World (Junior I & III)
    (2) Geographic Regions (Intermediate Middle Class)
      Interpretation of Seven Geographic Regions of South America
  3. Commercial Geography
    (1) Agriculture in the United States (Commercial Freshmen)
    (2) Transportation (Commercial Sophomores)
    (3) Manufacturing Activities of the New England Region (Commercial Seniors)
      Commercial Museum showing nine important types
  4. Current Geography
      (1) Publications containing Current Geographical material
    (2) Geography of the Pacific Situation (Intermediate Seniors)
    (3) Typewritten reports of topics current during 1920–21 (Commercial Seniors, 1920–21)
    (4) Newspaper Geography
      Clippings collected by all classes, assembled by Intermediate Middle class
  5. Travel Geography
    (1) Six Trips to Europe (Intermediate Middle Class)
    (2) Vacation Trip from Boston to Pacific Coast
      (Intermediate Seniors, 1921)

II. Source Materials
  1. Wall Maps
  2. Atlases
  3. Publications
    (1) Issued by the U. S. Government
    (2) Issued by the State
    (3) Issued by Chambers of Commerce, Railroads, and Steamship Lines
    (4) Issued by other Organizations and Institutions
    (5) Of value in Current Geography
    (6) Recent Books of Interest to Teachers
    (7) Supplementary Reading Material for Grades
    (8) Miscellaneous
  4. Mounted Pictures, Stereographs, etc
  5. Museum Materials

GEOGRAPHICAL PUBLICATIONS

W. G. Kendrew. **The Climates of the Continents.** 387 pp., 149 maps and diagrams. Oxford University Press, N. Y. 1922. $7.00.

The author has endeavored to present the main features of the climate of each region "in relation to the greater units of the globe." For Africa, Asia, Europe, South and Central America, Mexico and the West Indies a discussion of the general climatic features of each is followed by a more detailed discussion of the climate by sections or countries. For North America (excluding Mexico), Australia and New Zealand a treatment of the general climatic features is followed by a discussion of pressure and winds, temperature, rainfall, and special features such as hot winds and cold winds, and tropical cyclones. The climate of each region is illustrated by numerous maps and diagrams, and statistical tables supply data in detail.

So far as the writer knows this is the first volume in English that presents a description of the climate of each continent. It will, therefore, be welcomed by geographers and others who make use of climatic data. As a library reference it is invaluable for geographic instruction. Mr. Kendrew has made a genuine contribution to the subject.

R. H. Whitbeck. **High School Geography.** 577 pp., 383 maps, diagrams and photos. Macmillan Co., N. Y. 1922.

This work by Professor Whitbeck challenges attention because it carries the study of geographic influences directly into the field of physical geography.

The text is divided into twenty-four chapters of which the first twenty deal with physical geography features and their effects on human development. Emphasis is laid on economic relations. Taken as a whole the author has shown good judgment in properly balancing the discussion of the several main phases of physical geography. For example, fairly detailed discussion characterizes the chapters given to materials of the land, weathering, ground water, work of rivers, and climate. Much briefer discussion disposes of glaciers, earthquakes and volcanoes. In fact some criticism is likely to be made that not enough attention has been devoted to the effects of glaciation, to lead students into realization of its importance in the agricultural development of north central United States. The final four chapters take up summary studies of Latin America, The British Empire, Continental Europe, and Japan and China.

The discussion thruout is presented in concise language, easy to follow, and it seems that teachers should have no difficulty in leading students to take an active interest in the subject. The author evidently does not feel that this subject should be a slave to any particular method of teaching. Teaching aids and suggestions are freely given and they call for various methods, running the gauntlet from the old direct question method, thru the topical outline to the present-day problem study.

A commendable feature of the book is its large number of full-page illustrations. It is hoped that other authors will insist that illustrations in order to have merit must be given space enough to make clear what they are intended to emphasize.

Correlation of text and numerous illustrations is a task difficult to accomplish without some more or less serious discrepancies. As an example of this one may point out that the text on page 321 dealing with ocean currents should use the term "West Wind Drift" as shown on the map on the preceding page, rather than "North Atlantic Drift," or else change the wording on the map to conform to the text. The writer feels also that the author hardly does himself justice in the beginning of the first chapter. To have as the opening sentence "The earth is made up of (a) the land, (b) the air, and (c) the water" is so commonplace as to deaden rather than to stimulate interest. The introductory chapter has the most responsible position in the book and, therefore, it should present an inspiring discussion. Interest thus aroused would then be a dynamic force leading to continued success.

On the whole, however, Professor Whitbeck has made a contribution to high school geography that so insists on the pupils thinking thru from geographic causes to economic effects that it merits commendation from all fair-minded critics.

N. A. BENGTSON

University of Nebraska

Nora E. Macmunn and Geraldine Coster. **Europe, A Regional Geography.** 343 pages. 75 maps and diagrams. Oxford Press, N. Y. 1922.

This book will be of great value to advanced students of geography. Nora Macmunn and Geraldine Coster have worked out by means of the notes and outlines left by the late Professor Herbertson the scheme of providing a geography of Europe which is "regional in the true and logical sense of the word; that is, one in which the delimitation of geographical units shall be based on the interaction between man and his environment."

Seven large natural divisions are made and these in turn are divided into subregions. After a discussion concerning the general characteristics of the large regions such as physical history, climate, and vegetation each one of the subregions is taken up somewhat in detail. In this connection climate, vegetation, occupation and trade, natural routes and towns are some of the items treated.

The book has an abundance of sketch maps and monthly climatic charts which are of inestimable value in giving clear concepts of the material discussed.

The appendix contains a short description of the "Political Divisions and Peoples of Europe" by O. J. R. Howarth, a "Summary of the Geographic Clauses of the Treaty of Versailles May, 1919," and a set of genuine problems and questions based on each section of the book.

Without doubt this book will be useful as a high school and college reference.

M. PUDER

State Teachers College,
Mankato, Minn.

Daniel E. Willard. **The Story of the North Star State.** 395 pp., 156 maps, photos and diagrams. Pub. by the author, St. Anthony Hill Station, St. Paul, Minn. 1922. $2.50 prepaid.

This book deals with the geological history, the soils, lakes, rivers, forests, minerals, and other natural resources of the state. It is written in popular style and should appeal to the lay reader as well as the trained geologist and geographer. It should assist every citizen of the state to better appreciate the economic resources and beauties of his home region.

Eleanor K. Howarth. **A Geography of the Bible.** 96 pp., 2 maps, 16 photos. Oxford University Press, N. Y.

The purpose of this interesting little volume "is to show something of the world as it was known to the Hebrews during the time covered by Bible history." It treats Palestine; Eastern Palestine and Arabia; Syria, Phoenicia, and Philistia; Egypt; Babylonia and Syria; Asia Minor; Greece, Cyprus, and the Aegean Islands.

W. M. McConnell. **Industrial Maps.** Dobson-Evans Co., Columbus, Ohio. 1921. Price varies with number purchased.

This is a series of fifty-two outline maps for students' use. They cover such subjects as climate, population, crops, vegetation, minerals, soil, etc., by outlining these features so that the coloring may be done by the student with a minimum waste of time. Directions for the proper use of each map, necessary explanation, and questions for study are placed on the reverse side. The maps are the standard note-book size.

Eric A. Walker. **Historical Atlas of South Africa.** 26 pp. of text, 44 maps. Oxford University Press, N. Y. 1922. $3.50.

The "atlas is intended primarily to illustrate the history of South Africa south of the Zambezi" but other maps are included to better show the historical connection of this region with related areas. Economic maps are also included to explain the European partition of Africa in the nineteenth and twentieth centuries. Students of African history and geography will find this work highly valuable.

Albert Johannsen. **Essentials of the Microscopic Determination of Rock-forming Minerals and Rocks in Thin Sections.** 53 pp. University of Chicago Press, Chicago, Ill. 1922. $2.00.

Louise W. Mears. **America's Fairyland: The Hawaiian Islands.** 22 pp., 1 map, 4 photos. Pub. by author, State Normal School, Milwaukee, Wis. 1922. $0.75.

As indicated by the title the book is a brief description of the Hawaiian Islands. It treats the history, industries, surface features, climate, vegetation, people, and features of special interest. It is intended as supplementary material for teaching the geography of this interesting group of islands.

A General View of the Netherlands. Pub. by the Commerce Department of the Netherlands Ministry of Agriculture, The Hague. 1915.

A "General View of the Netherlands" is a series of pamphlets each treating a special phase of the general subject and each written by a specialist. The pamphlets are copiously illustrated by maps, diagrams and photographs. Together they constitute a very comprehensive treatise of the Netherlands and a very desirable reference for American students. The following subjects are treated in separate pamphlets: Agriculture and Cattle Breeding; Nurseries; Industries (two); Trade; Fisheries; Currency and Banking; Holland on the Seas; Ports and Waterways; What to See in the Netherlands from an Engineer's Point of View; Engineers and Contractors; Education; Science; Mental, Religious and Social Forces; Literature; Music; Fine Arts; Architecture; Public Health; Sport; The Woman's Movement; The Peace Movement.

Volume of United States Trade, 1921, by Ports of Origin and Destination. Miscl. Ser. 112. Department of Commerce, Washington, D. C.

B. R. Buckingham and P. R. Stevenson. **Place Geography Tests.** Public School Pub. Co., Bloomington, Ill. 1922.

William M. Davis. **A Graduate School of Geography.** *Pub. Clark University Library*, Oct., 1922.

Earl Harding. **Economic and Industrial Renaissance of Columbia.** *Bull. Pan Am. Union*, Oct., 1922.

Wilson Popenoe. **Notes on Peruvian Fruits.** 7 photos. *Bull. Pan Am. Union*, Oct., 1922.

Lee Shuttleworth. **Border Countries of the Punjab Himalaya.** 1 map, 8 photos. *Geog. Jour.*, Oct., 1922.

E. G. Sarsfield-Hall. **Darfur.** 11 photos. *Geog. Jour.*, Nov., 1922.

C. R. Cameron. **Certain Trees of Brazil: Their Economic and Industrial Uses.** *Bull. Pan Am. Union*, Nov., 1922.

Edward A. Salisbury. **Ashore at Pago Pago.** 9 photos. *Asia*, Oct., 1922.

Ernest F. Brace. **Along Remote Highways in Algeria.** 13 photos. *Travel*, Nov., 1922.

R. B. C. Graham. **Sun Drenched Cartagena.** 12 photos. *Travel*, Nov., 1922.

A. E. Grantham. **On the Open Road in the Chinese Autumn.** 5 photos. *Asia*, Nov., 1922.

O. D. von Engeln. **A Ride on the Barbado Railroad.** 2 photos. *The Rotarian*, Nov., 1922.

Herbert S. Dickey. **Amicable Visits with Peruvian Head Hunters.** 9 photos. *Travel*, Dec., 1922.

Maude L. Ballard. **Creating Florida's Golden Groves.** 8 photos. *Travel*, Dec., 1922.

J. Russell Smith. **Human Geography, Book Two, Regions and Trade.** 435 pp., 642 maps, diagrams and photos. John C. Winston Co., Philadelphia, 1922.

All teachers of geography, who have been emphasizing natural regions, will welcome this book. The author has broken away from the traditional method of organizing the content by countries. He has divided the earth into natural regions. A natural region, as used by Smith, is "a section of the earth's surface in which the people use the same set of natural forces or factors to supply their needs."

The teacher who has been trained to teach in terms of continents and political units may be temporarily puzzled by the organization of the book. For example, the Mediterranean Region, treated as a natural region, includes parts of three continents, Europe, Asia, and Africa. Under the customary plan, the different coasts of the Mediterranean are discussed in connection with the study of three continents. This is done in spite of the fact that somewhat comparable conditions prevail along the Mediterranean Coast. Under Smith's plan the natural regional treatment permits the unfolding of Mediterranean geography as a unit and with the detailed treatment so necessary to make the region real to the child.

The author assumes that the pupils have an elementary knowledge of the political units of each continent. This knowledge is acquired thru a study of his first book, which is based on the political divisions. In Book Two, however, the political maps have been included in addition to the maps showing the natural regions. The book therefore includes the material necessary for a review of the political regions if such a review is needed.

Book Two is distinctive in the extent to which it differs from Book One. The viewpoint and organization are different. The pupil needs to use his knowledge of countries, peoples, and industries gained in a study of Book One in the building up of an understanding of man's adjustments in the natural regions.

The maps and pictures have been carefully selected so as to re-enforce the descriptive and interpretative material. Liberal provision for individual work has been made.

The author has met the demand for a book organized on a natural region basis and dependent on but different from the book for the lower grades. Added to this is a vivid, appealing style.

Smith's Human Geographies are among the best textbooks available for the grades. The books will also be invaluable reference books for all teachers and students of geography.

M. E. BRANOM

Harris Teachers College, St. Louis